Document Revision Change Table

Revision Number	Revision Description	Revised By	Revision Date
Rev. 07	Procedure Review	G. Dawson	12/18/24
Rev. 07	Procedure Review	G. Dawson	12/11/23
Rev. 07	Procedure Review	G. Dawson	12/05/22
Rev. 07	Procedure Review	G. Dawson	12/21/21
Rev. 07	Procedure Review	G. Dawson	12/2020
Rev. 07	Procedure Review	G. Dawson	11/2019
Rev. 07	Program review changed from quarterly to at least once annually to correspond with corporate requirement.	G. Dawson	12/2018
Rev. 06	Procedure Review	G. Dawson	12/2017
Rev. 06	Procedure Review	G. Dawson	12/2016
Rev. 06	Procedure Review	G. Dawson	11/2015
Rev. 06	Updates for Safety & Health Advisory 218	G. Dawson	12/08/2014
Rev. 05	Added section 4.7 involving sections of pipe to be removed/replaced to require 55 gallon drum liners to be taped to open ends of pipe to help prevent contact/exposure to workers.	G. Dawson	09/03/14
Rev. 04	Highlighted areas reflect changes as per new corporate standard	S.Simoneaux	3/24/08
Rev. 03	*Considered as starting document for revision change table*		

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1. PURPOSE

To establish standard work practices and procedures considered the minimum for initial safe opening and ensuing work on flanges, pipes, and equipment which contained or may have contained hazardous material, thermal hazards (hot or cold) or may have been under pressure.

2. DEFINITIONS

2.1. Contracted Employee

An individual or group of individuals for whom the Beaumont Contact provides direct supervision in their day-to-day activities and direction as to how an activity is to be performed.

2.2. Contractor Employee

An individual engaged by or through a third party to perform services principally for the third party.

2.3. Hazardous Material/Energy Source

Any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy (e.g., radiation), including stored or residual energy, that if unexpectedly or inadvertently released, could cause injury to personnel, or if introduced into a process could be hazardous.

2.4. Learning Objective(s)

Specific knowledge, skills, or attitudes the training participant is intended to have learned at the conclusion of the training program. As a minimum, the learning objectives will include applicable regulatory training elements.

2.5. Line Breaking or Line Break

The actual opening/separation/removal of equipment to a point where it can be positively determined that no residual materials (liquid, gas, solid), or pressure are present or are controlled to the extent that they no longer pose a hazard to personnel. Equipment includes but is not limited to all types of flanges, manways/hatches, screwed pipe, fittings, exchanger tube plugs, valves, tubing, hoses or other types of connections/openings in process or utility service.

2.6. Operating/Owning Department

The BASF unit or department that operates or is responsible for the daily operation of the process, area or facility where work is being conducted.

2.7. Permit Acceptor

Person responsible for obtaining approval to do work.

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2. DEFINITIONS CONT'D

2.8. Owning/Operating Supervision
Trained and qualified personnel (including supervisors, operators, and laboratory technicians) for the affected department/unit who are responsible for authorizing Line Breaking through the completion of the Safe Work Permitting process.

2.9. Permit Issuer
Personnel that have been trained qualified and authorized to issue permits on behalf of the Operating/Owning Department.

2.10. 4-Eyes Principle
The use of 2 or more individuals (equipment operator/owner and individuals performing the work) to assess tasks in order to ensure that all hazards are identified and eliminated or controlled through safe work practices, use of PPE, communication and awareness.

2.11. Service Personnel
Any personnel involved in activities that are outside the scope of routine operations.

3. SCOPE

This procedure applies to Line Breaking activities at the BASF Beaumont Facility located in Beaumont Texas.

3.1. Service Personnel
This procedure applies to all Line Breaking activities at the BASF Beaumont plant site covered by the Safe Work Permitting Procedure. Some examples include installation of slip blinds, removal of PSV's or control valves, and opening of equipment manways.

3.2. Owning/Operating Personnel
This procedure applies to initial opening of lines or equipment, which contained or may have contained hazardous material, or may have been under pressure.

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4. PROCEDURE

4.1. General Requirements

4.1.1. Line Breaking Authorization

No personnel, including Operating/Owning Department personnel, shall perform a Line Break without the prior written authorization in the form of a permit issued by a Permit Issuer. The Permit Issuer must be a different individual than the Permit Acceptor performing the Line Breaking activity. Additional measures shall be determined (depending on the type of hazard. Examples include requirements to:

- Use the 4 Eyes-Principle and sign for the hazard review and necessary precautions (JSA).
- Only a Supervisor or Manager can allow specific authorize the permit (e.g., supervision, manager, team leader, subject matter expert)
- May require additional checklist or additional authorization (JSA)
- Implement measures for personnel working alone

Lines or equipment that have been previously opened under Line Breaking, and then subsequently closed shall be treated as a new Line Breaking activity before lines or equipment can be re-opened. All requirements of a new Line Breaking activity are applicable. This requirement also applies to lines and equipment that have been returned to service.

Permit Exemption – Routine activities (e.g., filter or strainer cleaning, hose connection or disconnection, vessel inspections for level gauging, process sampling), may be performed by trained Operating/Owning Department personnel without a permit provided that current Written Operating Procedures are utilized which cover the identification and control of hazards. The work must be performed using measures that provide protection equal to safeguards stated in this section.

4.2. Pre-Line Breaking Permit Activities

4.2.1. Owning/Operating Department

Prior to the performance of any work falling within the scope of this procedure, the Owning/Operating Department shall:

A. Initiate a safe work permit in accordance with the Beaumont Site's Safety and Health – Safe Work Permit Procedure.

B. Identify the last contents within the equipment and identify the hazards in terms of:

4. PROCEDURE CONT'D

- Flammability
- Toxicity
- Corrosiveness
- Temperature
- Pressure
- Any other known or anticipated hazard

These hazards will be noted on the safe work permit in Section II, Hazards/Communication.

C. Trace lines and/or equipment involved in the line break (4-eyes principle). Key items that should be noted include:

- Location of line break
- Isolation points
- Upstream/downstream branches
- Vent & drain points
- Liquid traps
- Hose and blow-down connections
- Check valves
- Other items that may influence the line preparation and break

D. Ensure that the lines or equipment have been emptied, purged, flushed, drained, vented, isolated and locked/tagged as applicable to ensure the system is free from recognized hazards.

Note: Opening of a bleed valve does not constitute an initial break.

E. Verify that de-pressurization of lines or equipment and absence of material has been accomplished by opening vents and drains or by other means deemed appropriate. The Owning/Operating Dept. must hang a completed red tag and lock at the point where the de-energization was verified, i.e. bleed, vent, start/stop switch, etc

F. Perform testing using a properly calibrated direct reading instrument or indicator on lines or equipment that may have contained flammable and / or toxic liquids or gases before and intermittently during the line breaking activities as appropriate for the operations. State testing parameters on the permit or in the written operating procedure.

NOTE: No Hot Work shall be permitted if any detectable LEL readings are obtained.

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4. PROCEDURE CONT'D

G. Ensure that where work is performed on elevated piping or equipment, the area below the work will be barricaded and splash pans provided as needed. Signs will be posted warning of overhead work.

H. Ensure that personnel performing the work will be fully informed of any potential hazards, special safety precautions;

- The nearest safety shower/eye wash station is located and tested prior to any Line Breaking activities.
- Appropriate personal protective equipment has been specified and documented on safe work permit Section VI, Work Environment/Personal Protective Equipment.

I. Ensure that the safe work permit has been completed and approved and is maintained at the work site.

J. Ensure that any other permits such as confined space, lockout/tagout or hotwork, are completed per the corresponding Beaumont Site safety procedure(s).

K. The Permit Issuer shall document field verification of all required pre-work on the permit

4.2.2. Servicing Department or Group

Prior to commencing work, service personnel will survey the lines or equipment to ensure that:

A. The lines or equipment have been properly prepared. An inspection of the lines/equipment shall be made with the Owning/Operating Department to verify in the field that the items above (A-J) have been completed or are in place according to the 4-Eyes Principle.

B. All applicable safe work procedures are in use and applicable safe work permits are properly completed.

C. Appropriate personal protective equipment has been defined and is in use.

4.3. Personal Protective Equipment (PPE)

4.3.1. Hazard Assessment

The appropriate type of PPE for each Line Breaking activity will vary depending on the hazards associated with the material normally in the line, the equipment, location of break, and ability to verify that equipment or line is clear. The specified PPE must be consistent with the Safety and Health current Site PPE Charts and the Personal Protective Equipment Procedure.

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4. PROCEDURE CONT'D

4.3.2. Minimum PPE Protection

Consult the Beaumont Site PPE Matrix for specific information on PPE.

• When activities have the potential to drip, spray, or pour downward onto individuals performing the work, additional measures may include the taping of glove / clothing openings, use of hooded clothing, or other measures to ensure that materials do not come into contact with the skin.

PPE may not be downgraded until line breaking activities have been properly terminated

4.3.3. Respiratory Protection

Where a potential for vapor or gas exposure exists, respiratory protection will be used.

- Where possible, atmospheric testing by means of vapor/gas sampling/metering shall be used to determine the presence and concentration of chemical vapors or gases. *Example of the type of equipment needed for gas detection; Single or Multi Gas Monitors (Industrial Scientific/ LEL, O2 and PID and/or Detector Tube (GasTec) pump sampling.*
- Respirator selection will be based on guidelines in the Beaumont site's Respiratory Protection Program.

4.4. Initial Line Break

4.4.1. All Line Breaking work activities pertaining to the permit will be approved by the Servicing Department/Group personnel and the Owning/Operating Department.

4.4.2. Personnel breaking lines must place themselves in a defensive position to avoid a spray of liquid or release when attempting the initial opening. Flanges will be cracked open on the opposite side of the line from the employee.

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4. PROCEDURE CONT'D

4.4.3. When Line Breaking operations may be required with **a known or suspected high potential for an IDLH condition, approval from Owning/Operating Department Supervision must be obtained** and the use of airline respirators or SCBA shall be required. An additional person (Operations or Maintenance) shall standby during the initial break dressed in the same level of PPE as the personnel performing the line break for the intent of providing immediate emergency assistance.

Consult the Beaumont Site PPE Matrix for Specific Information on PPE.

4.4.4. Personnel performing the line break shall verify the line status (drained, purged, etc.) immediately following the break. A visual inspection shall be made and measurements of air concentrations (%LEL, VOC ppm for toxins, etc.) shall be determined when applicable by a "**Qualified Person"** and noted on the permit.

- If the line status is within expected and acceptable conditions, work may be continued.
- If NO detectable air concentrations are monitored and no new or other known hazards are identified that would require existing or additional PPE, then down grading of initial Line Breaking requirements would be acceptable.

- If the line status is not within expected and acceptable conditions, work shall be stopped and additional line preparation activities shall be performed until the Owning/Operating Department and Service Personnel agree the line/equipment status is acceptable.
- Personnel performing Line Breaking shall utilize proper personal protective equipment during the initial line break/opening, bleeding of lines and venting of lines. See Beaumont Site PPE Matrix.

Note: "**Qualified Person"** may be an Operations or Maintenance Technician who successfully demonstrates knowledgeable operation, usage, and understanding of instrument functions and alarms. The on-site Hagemeyer/Vallen Technician upon request will provide training for the specific handheld atmospheric testing device required to detect desired chemical air concentrations.

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4. PROCEDURE CONT'D

4.5. Post-Line Breaking Activities

4.5.1. Termination of Line Breaking Activities

All applicable pre-work and PPE requirements shall remain in effect until it is positively verified that Hazardous Material/Energy Sources are no longer present or are controlled to the extent that they no longer pose a hazard to personnel. Verification shall be made through one or more of the following methods and documented on the permit, as applicable, by Operating/Owning Department personnel.

- Testing (i.e., neutral pH of flush water)
- The creation of a minimum ½" air gap between flanges
- Establishing a purge out an open drain valve adjacent to the planned line break
- Atmospheric monitoring for flammable, and/or toxic gas or vapor
- Monitoring for respirable atmosphere when working on lines containing asphyxiants
- Other methods approved by the site appropriate for the Hazardous Material/Energy Source

4.5.2. At the end of each workday/shift or completion of work and job area cleanup, Servicing Department/Group personnel must return all permits to the Owning/Operating Department**.**

4.6. Additional Line Breaking

Line Breaking occurs during the initial opening of flanges, vents, etc. (by the equipment owner or other service provider) to verify a line or vessel is clear of chemicals and pressure, as part of the equipment clearing process or during troubleshooting activities; AND to the initial separation/removal of equipment.

Line Breaking may occur at several points along a given system depending on layout and the potential for trapped or contained hazards to be present at various locations.

If a system or equipment, after it has undergone a Line Break, is closed but not put back into service and is subsequently reopened, the subsequent reopening is considered a new Line Break and must adhere to all the requirements of the initial Line Break.

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4. PROCEDURE CONT'D

4.7 Replacing/Moving Piping

If piping is to be taken out of service after it has been emptied, purged, flushed, drained, vented, isolated and locked/tagged as applicable, to ensure the system is free of recognized hazards, each section of pipe must have a plastic 55 gallon drum liners or Pipe Dots shall be placed on the open ends. The plastic bags must be taped to the piping to ensure any residual chemical that might be in the lines isn't likely to come in contact with or expose workers removing the piping.

4.8 Training

4.8.1. Personnel Involved in Line Breaking Activities

- Owning and/or Service Personnel shall receive training to recognize the applicability of Line Breaking situations and the necessary means to safeguard against the hazardous posed during these activities.
- Training shall be conducted during employee orientation and periodically thereafter, at least every third year.
- Retraining of employees is required whenever deviations or inadequacies in any procedure are identified.

Documentation

Training must be documented, including all the following:

- Each trainee's name,
- Date(s) of attendance,
- Means used to verify understanding, and
- Learning objective(s) for the course.

4.8.2 Personnel Not Directly Involved in Line Breaking Activities

- Personnel not directly involved on Line Breaking activities will receive instruction concerning their role in the procedure and how it may affect their specific work operation
- Training will be conducted during employee orientation and periodically thereafter, at least every third year.

4.8.3 Contractor

Contractors whose work may be affected by or involve Line Breaking will be informed of the Beaumont Line Breaking Procedure and how the requirements will be applied.

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4. PROCEDURE CONT'D

4.9 Inspection and Recordkeeping

Program inspection will be conducted at least once annually to ensure that the procedure and the requirements of the lockout/tagout standard are being followed. A representative of the Owning/Operating Department Supervision will conduct inspections or an authorized employee other than the employee involved in the lockout/tagout being inspected. This review will be conducted by inspecting actual procedures in the field and reviewing them with the employees who are following them. Any deficiencies uncovered by these inspections will be corrected and all affected personnel will be trained as necessary.

4.9.1 On an annual basis, Unit Supervision will conduct at least one inspection of a Line Breaking operation. These inspections will be documented on the Beaumont Line Breaking Inspection Form. The inspections shall be documented on the form found in Attachment A**.**

5. RESPONSIBILITIES

5.1. Beaumont Site Leadership Team

Has primary responsibility for implementation of this procedure.

5.2. Health and Safety Manager

Has primary responsibility for the initiation, re-issuance, administration, and/or interpretation of this procedure.

5.3. Beaumont Site Employees and Contractors

Have primary responsibility for adherence to procedure including identifying deficiencies in the procedure, and identifying, reporting and correcting activities not in compliance with the procedure

6. RELATED DOCUMENTS

BASF Beaumont – Safe Work Permit
BASF Beaumont – PPE Charts
BASF Beaumont – Control of Hazardous Energy (LT&T) Procedure
BASF Beaumont – Respiratory Protection Procedure
BASF Beaumont – Personal Protective Equipment Procedure
BASF Beaumont – Line Breaking Inspection Form (Attachment A)

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ATTACHMENT A

BASF BEAUMONT LINE BREAKING INSPECTION FORM

DATE :	**TIME :**	**SAFE WORK PERMIT NUMBER :**
INSPECTORS :	1)	
	2)	
SAFE WORK PERMIT ISSUED BY :		
PERMIT ISSUED TO :	1)	
PLEASE PRINT	2)	
	3)	
EQUIPMENT BEING WORKED ON / WORK BEING DONE :		
LIST CHEMICALS EQUIPMENT LAST CONTAINED :		

	YES	NO	N/A
MATERIALS AND HAZARDS DISCUSSED BEFORE WORK STARTED?			
LT&T PROCEDURES FOLLOWED AND ALL ENERGY SOURCES ISOLATED?			
DEPRESSURIZATION OF LINES AND EQUIPMENT VERIFIED BY OPENING VENTS & DRAINS?			
NEAREST EYEWASH/SAFETY SHOWER LOCATED AND TESTED BEFORE WORK STARTED?			
WARNING SIGNS AND/OR BARRICADES PROVIDED FOR ELEVATED WORK?			
TEMPERATURE CONCERNS ADDRESSED?			
OXYGEN AND LEL READINGS TAKEN IF FLAMMABLE BOX CHECKED?			
INSTRUMENT CALIBRATION DATE AND BUMP TEST CURRENT?			
STAND-BY PERSON WEARING SAME PPE AS PERSON PERFORMING LINE BREAK, READY TO ASSIST?			
CORECT PPE SELECTED AS PER PPE CHART?			
EMPLOYEE PERFORMING LINE BREAK IN DEFENSIVE POSITION TO AVOID EXPOSURE?			
SAFE WORK PERMIT PROPERLY COMPLETED, INCLUDING LINE BREAK SECTION?			
TAG OUT SHEET PROPERLY COMPLETED AND ATTACHED TO SAFE WORK PERMIT?			
EACH EMPLOYEE UNDERSTANDS THEIR RESPONSIBILITIES?			

IF ANY QUESTIONS WERE ANSWERED NO, NOTE IMMEDIATE AND LONG TERM CORRECTIVE ACTIONS TAKEN OR TO BE TAKEN.

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